

# Evaluate and Control Employee Exposures

WAC 296-841-200

## Rule

Table 3  
Permissible Exposure Limits for Air Contaminants

Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Abate (Temephos)	3383-96-8	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Acetaldehyde	75-07-0	100 ppm	150 ppm	----	----
Acetic acid	64-19-7	10 ppm	20 ppm	----	----
Acetic anhydride	108-24-7	----	----	5 ppm	----
Acetone	67-64-1	750 ppm	1,000 ppm	----	----
Acetonitrile	75-05-8	40 ppm	60 ppm	----	----
2-Acetylaminofluorene (see WAC 296-62-073)	53-96-3	----	----	----	----
Acetylene	74-86-2	Simple asphyxiant	----	----	----
Acetylene dichloride (1,2-Dichloroethylene)	540-59-0	200 ppm	250 ppm	----	----
Acetylene tetrabromide	79-27-6	1 ppm	3 ppm	----	----
Acetylsalicylic acid (Aspirin)	50-78-2	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Acrolein	107-02-8	0.1 ppm	0.3 ppm	----	----
Acrylamide	79-06-1	0.03 mg/m <sup>3</sup>	0.09 mg/m <sup>3</sup>	----	X
Acrylic acid	79-10-7	10 ppm	20 ppm	----	X
Acrylonitrile (Vinyl cyanide) (see WAC 296-62-07336)	107-13-1	2 ppm	10 ppm	----	----
Aldrin	309-00-2	0.25 mg/m <sup>3</sup>	0.75 mg/m <sup>3</sup>	----	X
Allyl alcohol	107-18-6	2 ppm	4 ppm	----	X
Allyl chloride	107-05-1	1 ppm	2 ppm	----	----
Allyl glycidyl ether (AGE)	106-92-3	5 ppm	10 ppm	----	----
Allyl propyl disulfide	2179-59-1	2 ppm	3 ppm	----	----
alpha-Alumina (Aluminum oxide)	1344-28-1	----	----	----	----
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---



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Aluminum (as Al)	7429-90-5	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Pyro powders	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Welding fumes	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Soluble salts	----	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	----
Alkyls (NOC)	----	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	----
Aluminum oxide (Alundum, Corundum)	7429-90-5	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
4-Aminodiphenyl (see WAC 296-62-073)	92-67-1	----	----	----	----
2-Aminoethanol (Ethanolamine)	141-43-5	3 ppm	6 ppm	----	----
2-Aminopyridine	504-29-0	0.5 ppm	1.5 ppm	----	----
Amitrole	61-82-5	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	----
Ammonia	7664-41-7	25 ppm	35 ppm	----	----
Ammonium chloride, fume	12125-02-9	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Ammonium sulfamate (Ammate)	7773-06-0	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5.0 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
n-Amyl acetate	628-63-7	100 ppm	150 ppm	----	----
sec-Amyl acetate	626-38-0	125 ppm	156 ppm	----	----
Aniline and homologues	62-53-3	2 ppm	4 ppm	----	X
Anisidine (o, p-isomers)	29191-52-4	0.1 ppm	0.3 ppm	----	X
Antimony and compounds (as Sb)	7440-36-0	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	----

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ANTU (alpha Naphthyl thiourea)	86-88-4	0.3 mg/m <sup>3</sup>	0.9 mg/m <sup>3</sup>	----	----
Argon	7440-37-1	Simple asphyxiant	----	----	----
Arsenic, organic compounds (as As)	7440-38-2	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	----
Arsenic, inorganic compounds (as As) (when use is covered by WAC 296-62- 07347)	7440-38-2	0.01 mg/m <sup>3</sup>	----	----	----
Arsenic, inorganic compounds (as As) (when use is not covered by WAC 296-62-07347)	7440-38-2	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	----
Arsine	7784-42-1	0.05 ppm	0.15 ppm	----	----
Asbestos (see WAC 296-62-077)	----	----	----	----	----
Asphalt (Petroleum fumes)	8052-42-4	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Atrazine	1912-24-9	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Azinphos methyl (Guthion)	86-50-0	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	X
Azodrin (Monocrotophos)	6923-22-4	0.25 mg/m <sup>3</sup>	0.75 mg/m <sup>3</sup>	----	----
Barium, soluble compounds (as Ba)	7440-39-3	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	----
Barium sulfate	7727-43-7	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Baygon (Propoxur)	114-26-1	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	----
Bonomyl	17804- 35-2	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Benzene (see WAC 296-62- 07523)	71-43-2	1 ppm	5 ppm	----	----



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Benzidine (see WAC 296-62-073)	92-87-5	----	----	----	----
p-Benzoquinone (Quinone)	106-51-4	0.1 ppm	0.3 ppm	----	----
Benzo(a) pyrene (Coal tar pitch volatiles)	65996-93-2	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	----
Benzoyl peroxide	94-36-0	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Benzyl chloride	100-44-7	1ppm	3 ppm	----	----
Beryllium and beryllium compounds (as Be)	7440-41-7	0.002 mg/m <sup>3</sup>	0.005 mg/m <sup>3</sup> (30 min.)	0.025 mg/ m <sup>3</sup>	----
Biphenyl (Diphenyl)	92-52-4	0.2 ppm	0.6 ppm	----	----
Bismuth telluride, undoped	1304-82-1	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Bismuth telluride, Se-doped	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Borates, tetra, sodium salts	----	----	----	----	----
Anhydrous	1330-43-4	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	----
Decahydrate	1303-96-4	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Pentahydrate	12179-04-3	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	----
Boron oxide	1303-86-2	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Boron tribromide	10294-33-4	----	----	1 ppm	----
Boron trifluoride	6737-07-2	----	----	1 ppm	----
Bromacil	314-40-9	1 ppm	3 ppm	----	----
Bromine	7726-95-6	0.1 ppm	0.3 ppm	----	----
Bromine pentafluoride	7789-30-2	0.1 ppm	0.3 ppm	----	----
Bromochloromethane (Chlorobromom-thane)	74-97-5	200 ppm	250 ppm	----	----
Bromoform	15-25-2	0.5 ppm	1.5 ppm	----	X
Butadiene (1,3-butadiene)	106-99-0	1 ppm	5 ppm	----	----

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Butane	106-97-8	800 ppm	1,000 ppm	---	---
Butanethiol (Butyl mercaptan)	109-79-5	0.5 ppm	1.5 ppm	---	---
2-Butanone (Methyl ethyl ketone)	78-93-3	200 ppm	300 ppm	---	---
2-Butoxy ethanol (Butyl cellosolve)	111-76-2	25 ppm	38 ppm	---	X
n-Butyl acetate	123-86-4	150 ppm	200 ppm	---	---
sec-Butyl acetate	105-46-4	200 ppm	250 ppm	---	---
tert-Butyl acetate	540-88-5	200 ppm	250 ppm	---	---
Butyl acrylate	141-32-2	10 ppm	20 ppm	---	---
n-Butyl alcohol	71-36-3	---	---	50 ppm	X
sec-Butyl alcohol	78-92-2	100 ppm	150 ppm	---	---
tert-Butyl alcohol	75-65-0	100 ppm	150 ppm	---	---
Butylamine	109-73-9	---	---	5 ppm	X
Butyl cellosolve (2-Butoxy ethanol)	111-76-2	25 ppm	38 ppm	---	---
tert-Butyl chromate (as CrOs)	1189-85-1	---	---	0.1 mg/m <sup>3</sup>	X
n-Butyl glycidyl ether (BGE)	2426-08-6	25 ppm	38 ppm	---	---
n-Butyl lactate	138-22-7	5 ppm	10 ppm	---	---
Butyl mercaptan	109-79-5	0.5 ppm	1.5 ppm	---	---
o-sec-Butylphenol	89-72-5	5 ppm	10 ppm	---	X
p-tert-Butyl-toluene	98-51-1	10 ppm	20 ppm	---	---
Cadmium oxide fume (as Cd) (see WAC 296-62-074)	1306-19-0	0.005 mg/m <sup>3</sup>	---	---	---
Cadmium dust and salts (as Cd) (see WAC 296-62-074)	7440-43-9	0.005 mg/m <sup>3</sup>	---	---	---
Calcium arsenate (see WAC 296-62-07347)	---	0.01 mg/m <sup>3</sup>	---	---	---
Calcium carbonate	1317-65-3	---	---	---	---
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---



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Calcium cyanamide	156-62-7	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	----
Calcium hydroxide	1305-62-0	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Calcium oxide	1305-78-8	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	----
Calcium silicate	1344-95-2	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Calcium sulfate	7778-18-9	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Camphor (synthetic)	76-22-2	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	----
Caprolactam	105-60-2	----	----	----	----
Dust	----	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	----
Vapor	----	5 ppm	10 ppm	----	----
Captafol (Difolatan)	2425-06-1	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Captan	133-06-2	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Carbaryl (Sevin)	63-25-2	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Carbofuran (Furadon)	1563-66-2	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Carbon black	1333-86-4	3.5 mg/m <sup>3</sup>	7 mg/m <sup>3</sup>	----	----
Carbon dioxide	124-38-9	5,000 ppm	30,000 ppm	----	----
Carbon disulfide	75-15-0	4 ppm	12 ppm	----	X
Carbon monoxide	630-08-0	35 ppm	200 ppm (5 min.)	1,500 ppm	----
Carbon tetrabromide	558-13-4	0.1 ppm	0.3 ppm	----	----
Carbon tetrachloride (Tetrachloro-methane)	56-23-5	2 ppm	4 ppm	----	X
Carbonyl chloride (Phosgene)	7803-51-2	0.1 ppm	0.3 ppm	----	----
Carbonyl fluoride	353-50-4	2 ppm	5 ppm	----	----

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Catechol (Pyrocatechol)	120-80-9	5 ppm	10 ppm	----	X
Cellosolve acetate (2-Ethoxyethylacetate)	111-15-9	5 ppm	10 ppm	----	X
Cellulose (paper fiber)	9004-34-6	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Cesium hydroxide	21351-79-1	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	----
Chlordane	57-74-9	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	X
Chlorinated camphene (Toxaphen)	8001-35-2	0.5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	----	X
Chlorinated diphenyl oxide	55720-99-5	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	----
Chlorine	7782-50-5	0.5 ppm	----	1 ppm	----
Chlorine dioxide	10049-04-4	0.1 ppm	0.3 ppm	----	----
Chlorine trifluoride	7790-91-2	----	----	0.1 ppm	----
Chloroacetaldehyde	107-20-0	----	----	1 ppm	----
a-Chloroacetophenone (Phenacyl chloride)	532-21-4	0.05 ppm	0.15 ppm	----	----
Chloroacetyl chloride	79-04-9	0.05 ppm	0.15 ppm	----	----
Chlorobenzene (Monochlorobenzene)	108-90-7	75 ppm	113 ppm	----	----
o-Chlorobenzylidene malononitrile (OCBM)	2698-41-1	----	----	0.05 ppm	X
Chlorobromomethane	74-97-5	200 ppm	250 ppm	----	----
2-Chloro-1, 3-butadiene (beta-Chloroprene)	126-99-8	10 ppm	20 ppm	----	X
Chlorodifluoromethane	75-45-6	1,000 ppm	1,250 ppm	----	----
Chlorodiphenyl (42% Chlorine) (PCB) (Polychlorobiphenyls)	53469-21-9	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	X



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Chlorodiphenyl (54% Chlorine) (Polychloro-biphenyls (PCB))	11097-69-1	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	X
1-Chloro-2, 3-epoxypropane (Epichlorhydrin)	106-89-8	2 ppm	4 ppm	----	X
2-Chloroethanol (Ethylene chlorohydrin)	107-07-3	----	----	1 ppm	X
Chloroethylene (vinyl chloride) (See WAC 296-62-07329)	75-01-4	1 ppm	5 ppm	----	----
Chloroform (Trichloromethane)	67-66-3	2 ppm	4 ppm	----	----
1-Chloro-1-nitropropane	600-25-9	2 ppm	4 ppm	----	----
bis-Chloromethyl ether (see WAC 296-62-073)	542-88-1	----	----	----	----
Chloromethyl methyl ether (Methyl chloromethyl ether) (see WAC 296-62-073)	107-30-2	----	----	----	----
Chloropentafluoroethane	76-15-3	1,000 ppm	1,250 ppm	----	----
Chloropicrin (Nitrotrichloromethane)	76-06-2	0.1 ppm	0.3 ppm	----	----
beta-Chloroprene (2-Chloro-1,3-butadiene)	126-99-8	10 ppm	20 ppm	----	X
o-Chlorostyrene	2039-87-4	50 ppm	75 ppm	----	----
o-Chlorotoluene	95-49-8	50 ppm	75 ppm	----	----
2-Chloro-6-trichloromethyl pyridine (Nitrapyrin)	1929-82-4	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Chlorpyrifos	2921-88-2	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	X
Chromic acid and chromates (as CrO <sub>3</sub> )	Varies with compound	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----

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Chromium, soluble, chromic and chromous salts (as Cr)	7440-47-3	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	---
Chromium (VI) compounds (as Cr)	----	0.05 mg/m <sup>3</sup>	0.15 mg/m <sup>3</sup>	----	----
Chromium metal and insoluble salts	7440-47-3	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	----
Chromyl chloride	14977-61-8	0.025 ppm	0.075 ppm	----	----
Chrysene (Coal tar pitch volatiles)	65996-93-2	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	----
Clopidol	2971-90-6	----	----	----	----
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Coal dust (less than 5% SiO <sub>2</sub> )	----	----	----	----	----
Respirable fraction	----	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	----
Coal dust (greater than or equal to 5% SiO <sub>2</sub> )	----	----	----	----	----
Respirable fraction	----	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Coal tar pitch volatiles (benzene soluble fraction) (Particulate polycyclic aromatic hydrocarbons)	65996-93-2	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	----
Cobalt, metal fume & dust (as Co)	7440-48-4	0.05 mg/m <sup>3</sup>	0.15 mg/m <sup>3</sup>	----	----
Cobalt carbonyl (as Co)	10210-68-1	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Cobalt hydrocarbyl (as Co)	16842-03-8	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Coke oven emissions (see WAC 296-62-200)	----	0.15 mg/m <sup>3</sup>	----	----	----
Copper (as Cu)	7440-50-8	----	----	----	----
Fume	----	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Dusts and mists	----	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	----



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Cotton dust (raw) (waste sorting, blending, cleaning, willowing and garetting) (see WAC 296-62-14533)	---	1 mg/m <sup>3</sup>	---	---	---
Corundum (Aluminum oxide)	7429-90-5	---	---	---	---
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Crag herbicide (Sesone, Sodium-2, 4-dichloro-phenoxyethyl sulfate)	136-78-7	---	---	---	---
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Cresol (all isomers)	1319-77-3	5 ppm	10 ppm	---	X
Crotonaldehyde	123-73-9; 4170-30-3	2 ppm	4 ppm	---	---
Crufomate	299-86-5	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Cumene	98-82-8	50 ppm	75 ppm	---	X
Cyanamide	420-04-2	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	---	---
Cyanide (as CN)	Varies with compound	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	X
Cyanogen	460-19-5	10 ppm	20 ppm	---	---
Cyanogen chloride	506-77-4	---	---	0.3 ppm	---
Cyclohexane	110-82-7	300 ppm	375 ppm	---	---
Cyclohexanol	108-93-0	50 ppm	75 ppm	---	X
Cyclohexanone	108-94-1	25 ppm	38 ppm	---	X
Cyclohexene	110-83-8	300 ppm	375 ppm	---	---
Cyclohexylamine	108-91-8	10 ppm	20 ppm	---	---
Cyclonite (RDX)	121-82-4	1.5 mg/m <sup>3</sup>	3.0 mg/m <sup>3</sup>	---	X
Cyclopentadiene	542-92-7	75 ppm	113 ppm	---	---
Cyclopentane	287-92-3	600 ppm	750 ppm	---	---

Evaluate and Control  
Employee Exposure



# Evaluate and Control Employee Exposures

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Table 3  
Permissible Exposure Limits for Air Contaminants

Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Cyhexatin (Tricyclohexyltin hydroxide)	13121-70-5	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
2,4-D (Dichlorophenoxy-acetic acid)	94-75-7	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
DBCP (1,2-Dibromo-3-chloropropane) (See WAC 296-62-07342)	96-12-8	0.001 ppm	----	0.005 ppm	----
DDT (Dichlorodiphenyltrichloroethane)	50-29-3	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	X
DDVP, (Dichlorvos)	62-73-7	0.1 ppm	0.3 ppm	----	X
Dasanit (Fensulfothion)	115-90-2	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Decaborane	17702-41-9	0.05 ppm	0.15 ppm	----	X
Demeton	8065-48-3	0.01 ppm	0.03 ppm	----	X
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	123-42-2	50 ppm	75 ppm	----	----
1, 2-Diaminoethane (Ethylenediamine)	107-15-3	10 ppm	20 ppm	----	----
Diazinon	333-41-5	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Diazomethane	334-88-3	0.2 ppm	0.6 ppm	----	----
Diborane	19287-45-7	0.1 ppm	0.3 ppm	----	----
Dibrom (see Naled)	300-76-5	3 mg/m <sup>3</sup>	6 mg/m <sup>3</sup>	----	X
1, 2-Dibromo-3-chloropropane (DBCP) (see WAC 296-62-07342)	96-12-8	0.001 ppm	----	0.005 ppm	----
2-N-Dibutylamino ethanol	102-81-8	2 ppm	4 ppm	----	X
Dibutyl phosphate	107-66-4	1 ppm	2 ppm	----	----
Dibutyl phthalate	84-74-2	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Dichloroacetylene	7572-29-4	----	----	0.1 ppm	----
o-Dichlorobenzene	95-50-1	----	----	50 ppm	----
p-Dichlorobenzene	106-46-7	75 ppm	110 ppm	----	----
3, 3'-Dichlorobenzidine (see WAC 296-62-073)	91-94-1	----	----	----	----



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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Dichlorodiphenyltrichloroethane (DDT)	50-29-3	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	X
Dichlorodifluoromethane	75-71-8	1,000 ppm	1,250 ppm	----	----
1, 3-Dichloro-5, 5-dimethylhydantoin	118-52-5	0.2 mg/m <sup>3</sup>	0.4 mg/m <sup>3</sup>	----	----
1, 1-Dichloroethane (Ethylidene chloride)	75-34-3	100 ppm	150 ppm	----	----
1, 2-Dichloroethane (Ethylene dichloride)	107-06-2	1 ppm	2 ppm	----	----
1, 1-Dichloroethylene (Vinylidene chloride)	75-35-4	1 ppm	3 ppm	----	----
1, 2-Dichloroethylene (Acetylene dichloride)	540-59-0	200 ppm	250 ppm	----	----
Dichloroethyl ether	111-44-4	5 ppm	10 ppm	----	X
Dichlorofluoromethane	75-43-4	10 ppm	20 ppm	----	----
Dichloromethane (Methylene chloride) (See WAC 296-62-07470)	75-09-2	25 ppm	125 ppm	----	----
1, 1-Dichloro-1-nitroethane	594-72-9	2 ppm	10 ppm	----	----
Dichlorophenoxyacetic acid (2, 4-D)	94-75-7	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
1, 2-Dichloropropane (Propylene dichloride)	78-87-5	75 ppm	110 ppm	----	----
Dichloropropene	542-75-6	1 ppm	3 ppm	----	X
2, 2-Dichloropropionic acid	75-99-0	1 ppm	3 ppm	----	----
Dichlorotetrafluoroethane	76-14-2	1,000 ppm	1,250 ppm	----	----
Dichlorvos (DDVP)	62-73-7	0.1 ppm	0.3 ppm	----	X
Dicrotophos	141-66-2	0.25 mg/m <sup>3</sup>	0.75 mg/m <sup>3</sup>	----	X
Dicyclopentadiene	77-73-6	5 ppm	10 ppm	----	----
Dicyclopentadienyl iron	102-54-5	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Dieldrin	60-57-1	0.25 mg/m <sup>3</sup>	0.75 mg/m <sup>3</sup>	----	X

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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Diethanolamine	111-42-2	3 ppm	6 ppm	----	---
Diethylamine	109-89-7	10 ppm	25 ppm	----	---
2-Diethylaminoethanol	100-37-8	10 ppm	20 ppm	----	X
Diethylene triamine	111-40-0	1 ppm	3 ppm	----	X
Diethyl ether (Ethyl ether)	60-29-7	400 ppm	500 ppm	----	---
Diethyl ketone	96-22-0	200 ppm	250 ppm	----	---
Diethyl phthalate	84-66-2	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	---
Difluorodibromomethane	75-61-6	100 ppm	150 ppm	----	---
Difolatan (Captafol)	2425-06-1	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Diglycidyl ether (DGE)	2238-07-5	0.1 ppm	0.3 ppm	----	---
Dihydroxybenzene (Hydroquinone)	123-31-9	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	---
Diisobutyl ketone (2, 6-Dimethylheptanone)	108-83-8	25 ppm	38 ppm	----	---
Diisopropylamine	108-18-9	5 ppm	10 ppm	----	X
Dimethoxymethane (Methylal)	109-87-5	1,000 ppm	1,250 ppm	----	---
Dimethyl acetamide	127-19-5	10 ppm	20 ppm	----	X
Dimethylamine	124-40-3	10 ppm	20 ppm	----	---
4-Dimethylaminoazo benzene (see WAC 296-62-073)	60-11-7	----	----	----	---
Dimethylaminobenzene (Xyldene)	1300-73-8	2 ppm	4 ppm	----	X
Dimethylaniline (N, N-Dimethylaniline)	121-69-7	5 ppm	10 ppm	----	X
Dimethylbenzene (Xylene)	1300-73-8	100 ppm	150 ppm	----	---
Dimethyl-1, 2-dibromo-2, 2-dichloroethyl phosphate (Naled)	300-76-5	3 mg/m <sup>3</sup>	6 mg/m <sup>3</sup>	----	X
Dimethylformamide	68-12-2	10 ppm	20 ppm	----	X
2, 6-Dimethylheptanone (Diisobutyl ketone)	108-83-8	25 ppm	38 ppm	----	---
1, 1-Dimethylhydrazine	57-14-7	0.5 ppm	1.5 ppm	----	X



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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Dimethyl phthalate	131-11-3	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Dimethyl sulfate	77-78-1	0.1 ppm	0.3 ppm	----	X
Dinitolmide (3, 5-Dinitro-o-toluamide)	148-01-6	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Dinitrobenzene (all isomers - alpha, meta and para)	528-29-0; 99-65-0; 100-25-4	0.15 ppm	0.45 ppm	----	X
Dinitro-o-cresol	534-52-1	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	X
3, 5-Dinitro-o-toluamide (Dinitolmide)	148-01-6	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Dinitrotoluene	25321-14-6	1.5 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	X
Dioxane (Diethylene dioxide)	123-91-1	25 ppm	38 ppm	----	X
Dioxathion	78-34-2	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	X
Diphenyl (Biphenyl)	92-52-4	0.2 ppm	0.6 ppm	----	----
Diphenylamine	122-39-4	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Diphenylmethane diisocyanate (Methylene bisphenylisocyanate (MDI))	101-68-8	----	----	0.02 ppm	----
Dipropylene glycol methyl ether	34590-94-8	100 ppm	150 ppm	----	X
Dipropyl ketone	123-19-3	50 ppm	75 ppm	----	----
Diquat	85-00-7	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	----
Di-sec, Octyl phthalate (Di-2-ethylhexylphthalate)	117-81-7	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Disulfiram	97-77-8	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	----
Disulfoton	298-04-4	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
2, 6-Di-tert-butyl-p-cresol	128-37-0	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Diuron	330-54-1	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Divinyl benzene	1321-74-0	10 ppm	20 ppm	----	----
Emery	12415-34-8	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----

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Table 3  
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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Endosulfan (Thiodan)	115-29-7	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Endrin	72-20-8	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Epichlorhydrin (1-Chloro-2, 3-epoxypropane)	106-89-8	2 ppm	4 ppm	----	X
EPN	2104-64-5	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	X
1, 2-Epoxypropane (Propylene oxide)	75-56-9	20 ppm	30 ppm	----	---
2, 3-Epoxy-1-propanol (Glycidol)	556-52-5	25 ppm	38 ppm	----	---
Ethane	----	Simple asphyxiant	----	----	---
Ethanethiol (Ethyl mercaptan)	75-08-1	0.5 ppm	1.5 ppm	----	---
Ethanol (Ethyl alcohol)	64-17-5	1,000 ppm	1,250 ppm	----	---
Ethanolamine (2-Aminoethanol)	141-43-5	3 ppm	6 ppm	----	---
Ethion	563-12-2	0.4 mg/m <sup>3</sup>	1.2 mg/m <sup>3</sup>	----	X
2-Ethoxyethanol (Glycol monoethyl ether)	110-80-5	5 ppm	10 ppm	----	X
2-Ethoxyethyl acetate (Cellosolve acetate)	111-15-9	5 ppm	10 ppm	----	X
Ethyl acetate	141-78-6	400 ppm	500 ppm	----	---
Ethyl acrylate	140-88-5	5 ppm	25 ppm	----	X
Ethyl alcohol (ethanol)	64-17-5	1,000 ppm	1,250 ppm	----	---
Ethylamine	75-04-07	10 ppm	20 ppm	----	---
Ethyl amyl ketone (5-Methyl-3-heptanone)	541-85-5	25 ppm	38 ppm	----	---
Ethyl benzene	100-41-4	100 ppm	125 ppm	----	---
Ethyl bromide	74-96-4	200 ppm	250 ppm	----	---
Ethyl butyl ketone (3-Heptanone)	106-35-4	50 ppm	75 ppm	----	---
Ethyl chloride	75-00-3	1,000 ppm	1,250 ppm	----	---



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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Ethylene	74-85-1	Simple asphyxiant	----	----	----
Ethylene chlorohydrin (2-Chloroethanol)	107-07-3	----	----	1 ppm	X
Ethylenediamine (1,2-Diaminoethane)	107-15-3	10 ppm	20 ppm	----	X
Ethylene dibromide	106-93-4	0.1 ppm	0.5 ppm	----	----
Ethylene dichloride (1,2-Dichloroethane)	107-06-2	1 ppm	2 ppm	----	----
Ethylene glycol	107-21-1	----	----	50 ppm	----
Ethylene glycol dinitrate	628-96-6	----	0.1 mg/m <sup>3</sup>	----	X
Ethylene glycol monomethyl ether acetate (Methyl cellosolve acetate)	----	5 ppm	10 ppm	----	X
Ethyleneimine (see WAC 296-62-073)	151-56-4	----	----	----	X
Ethylene oxide (see WAC 296-62-07359)	75-21-8	1 ppm	5 ppm	----	----
Ethyl ether (Diethyl ether)	60-29-7	400 ppm	500 ppm	----	----
Ethyl formate	109-94-4	100 ppm	125 ppm	----	----
Ethyldine chloride (1, 1-Dichloroethane)	107-06-2	1 ppm	2 ppm	----	----
Ethyldene norbornene	16219-75-3	----	----	5.0 ppm	----
Ethyl mercaptan (Ethanethiol)	75-08-1	0.5 ppm	1.5 ppm	----	----
n-Ethylmorpholine	100-74-3	5 ppm	10 ppm	----	X
Ethyl sec-amyl ketone (5-methyl-3-heptanone)	541-85-5	25 ppm	38 ppm	----	----
Ethyl silicate	78-10-4	10 ppm	20 ppm	----	----

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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Fenamiphos	22224-92-6	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Fensulfothion (Dasanit)	115-90-2	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Fenthion	55-38-9	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	X
Ferbam	----	----	----	----	----
Total particulate	14484-64-1	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Ferrovanadium dust	12604-58-9	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	----
Fluorides (as F)	Varies with compound	2.5 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>	----	----
Fluorine	7782-41-4	0.1 ppm	0.3 ppm	----	----
Fluorotrichloromethane (see Trichlorofluoro methane)	75-69-4	----	----	1,000 ppm	----
Fonofos	944-22-9	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Formaldehyde (see WAC 296-62-07540)	50-00-0	0.75 ppm	2 ppm	----	----
Formamide	75-12-7	20 ppm	30 ppm	----	----
Formic acid	64-18-6	5 ppm	10 ppm	----	----
Furadon (carbofuran)	1563-66-2	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Furfural	98-01-1	2 ppm	4 ppm	----	X
Furfuryl alcohol	98-00-0	10 ppm	15 ppm	----	X
Gasoline	8006-61-9	300 ppm	500 ppm	----	----
Germanium tetrahydride	7782-65-2	0.2 ppm	0.6 ppm	----	----
Glass, fibrous or dust	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Glutaraldehyde	111-30-8	----	----	0.2 ppm	----
Glycerin mist	56-81-5	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----



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Substance	CAS	TWA <sub>8</sub>	STEL		Skin
Glycidol (2, 3-Epoxy-1-propanol)	556-52-5	25 ppm	38 ppm	---	---
Glycol monoethyl ether (2-Ethoxyethanol)	110-80-5	5 ppm	10 ppm	---	X
Grain dust (oat, wheat, barley)	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Graphite, natural	7782-42-5	---	---	---	---
Respirable particulate	---	2.5 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>	---	---
Graphite, synthetic	---	---	---	---	---
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Guthion (Azinphosmethyl)	86-50-0	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	---	X
Gypsum	13397-24-5	---	---	---	---
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Hafnium	7440-58-6	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	---	---
Helium	---	Simple asphyxiant	---	---	---
Heptachlor	76-44-8	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	---	X
Heptane (n-heptane)	142-82-5	400 ppm	500 ppm	---	---
2-Heptanone (Methyl n-amyl ketone)	110-43-0	50 ppm	75 ppm	---	---
3-Heptanone (Ethyl butyl ketone)	106-35-4	50 ppm	75 ppm	---	---
Hexachlorobutadiene	87-68-3	0.02 ppm	0.06 ppm	---	X
Hexachlorocyclopentadiene	77-47-4	0.01 ppm	0.03 ppm	---	---
Hexachloroethane	67-72-1	1 ppm	3 ppm	---	X
Hexachloronaphthalene	1335-87-1	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	---	X
Hexafluoroacetone	684-16-2	0.1 ppm	0.3 ppm	---	X

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Table 3  
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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Hexane	---	---	---	---	---
n-hexane	110-54-3	50 ppm	75 ppm	---	---
other isomers	Varies with compound	500 ppm	1,000 ppm	---	---
2-Hexanone (Methyl-n-butyl ketone)	591-78-6	5 ppm	10 ppm	---	---
Hexone (Methyl isobutyl ketone)	108-10-1	50 ppm	75 ppm	---	---
sec-Hexyl acetate	108-84-9	50 ppm	75 ppm	---	---
Hexylene glycol	107-41-5	---	---	25 ppm	---
Hydrazine	302-01-2	0.1 ppm	0.3 ppm	---	X
Hydrogen	---	Simple asphyxiant	---	---	---
Hydrogenated terphenyls	61788-32-7	0.5 ppm	1.5 ppm	---	---
Hydrogen bromide	10035-10-6	---	---	3.0 ppm	---
Hydrogen chloride	7647-01-0	---	---	5.0 ppm	---
Hydrogen cyanide	74-90-8	---	4.7 ppm	---	X
Hydrogen fluoride	7664-39-3	---	---	3 ppm	---
Hydrogen peroxide	7722-84-1	1 ppm	3 ppm	---	---
Hydrogen selenide (as Se)	7783-07-5	0.05 ppm	0.15 ppm	---	---
Hydrogen sulfide	7783-06-4	10 ppm	15 ppm	---	---
Hydroquinone (Dihydroxybenzene)	123-31-9	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	---	---
4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)	123-42-2	50 ppm	75 ppm	---	---
2-Hydroxypropyl acrylate	99-61-1	0.5 ppm	1.5 ppm	---	X
Indene	95-13-6	10 ppm	20 ppm	---	---
Indium and compounds (as In)	7440-74-6	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	---	---



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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Iodine	7553-56-2	----	----	0.1 ppm	----
Iodoform	75-47-8	0.6 ppm	1.8 ppm	----	----
Iron oxide dust and fume (as Fe)	1309-37-1	----	----	----	----
Total particulate	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Iron pentacarbonyl (as Fe)	13463-40-6	0.1 ppm	0.2 ppm	----	----
Iron salts, soluble (as Fe)	Varies with compound	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	----
Isoamyl acetate	123-92-2	100 ppm	150 ppm	----	----
Isoamyl alcohol (primary and secondary)	123-51-3	100 ppm	125 ppm	----	----
Isobutyl acetate	110-19-0	150 ppm	188 ppm	----	----
Isobutyl alcohol	78-83-1	50 ppm	75 ppm	----	----
Isooctyl alcohol	26952-21-6	50 ppm	75 ppm	----	X
Isophorone	78-59-1	4 ppm	----	5 ppm	----
Isophorone diisocyanate	4098-71-9	0.005 ppm	0.02 ppm	----	X
Isopropoxyethanol	109-59-1	25 ppm	38 ppm	----	----
Isopropyl acetate	108-21-4	250 ppm	310 ppm	----	----
Isopropyl alcohol	67-63-0	400 ppm	500 ppm	----	----
Isopropylamine	75-31-0	5 ppm	10 ppm	----	----
N-Isopropylaniline	768-52-5	2 ppm	4 ppm	----	X
Isopropyl ether	108-20-3	250 ppm	313 ppm	----	----
Isopropyl glycidyl ether (IGE)	4016-14-2	50 ppm	75 ppm	----	----
Kaolin	----	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----

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Table 3  
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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Ketene	463-51-4	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	----
Lannate (Methomyl)	16752-77-5	2.5 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>	----	----
Lead, inorganic (as Pb) (see WAC 296-62-07521 and 296-155-176)	7439-92-1	0.05 mg/m <sup>3</sup>	----	----	----
Lead arsenate (as Pb) (see WAC 296-62-07347)	3687-31-8	0.05 mg/m <sup>3</sup>	----	----	----
Lead chromate (as Pb)	7758-97-6	0.05 mg/m <sup>3</sup>	----	----	----
Limestone	1317-65-3	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Lindane	58-89-9	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	X
Lithium hydride	7580-67-8	0.025 mg/m <sup>3</sup>	0.075 mg/m <sup>3</sup>	----	----
L.P.G. (liquefied petroleum gas)	68476-85-7	1,000 ppm	1,250 ppm	----	----
Magnesite	546-93-0	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Magnesium oxide fume	1309-48-4	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Malathion	121-75-5	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	X
Maleic anhydride	108-31-6	0.25 ppm	0.75 ppm	----	----
Manganese and compounds (as Mn)	7439-96-5	----	----	5 mg/m <sup>3</sup>	----
Manganese cyclopentadienyl tricarbonyl (as Mn)	12079-65-1	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X



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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Manganese tetroxide and fume (as Mn)	7439-96-5	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	----
Marble	1317-65-3	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
MBOCA (4, 4'-Methylene bis (2-chloro-aniline)) (see WAC 296-62-073)	101-14-4	----	----	----	X
MDA (4, 4-Methylene dianiline) (see WAC 296-62-076)	101-77-9	0.01 ppm	0.1 ppm	----	X
MDI (Methylene bisphenyl isocyanate) (Diphenylmethane diisocyanate)	101-68-8	----	----	0.02 ppm	----
MEK (Methyl ethyl ketone) (2-Butanone)	78-93-3	200 ppm	300 ppm	----	----
MEKP (Methyl ethyl ketone peroxide)	1338-23-4	----	----	0.2 ppm	----
Mercury (as Hg)	7439-97-6	----	----	----	----
Aryl and inorganic	----	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Organic-alkyl compounds	----	0.01 mg/m <sup>3</sup>	0.03 mg/m <sup>3</sup>	----	X
Vapor	----	0.05 mg/m <sup>3</sup>	0.15 mg/m <sup>3</sup>	----	X

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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Mesityl oxide	141-79-7	15 ppm	25 ppm	----	----
Methacrylic acid	79-41-4	20 ppm	30 ppm	----	X
Methane	----	Simple asphyxiant	----	----	----
Methanethiol (Methyl mercaptan)	74-93-1	0.5 ppm	1.5 ppm	----	----
Methanol (Methyl alcohol)	67-56-1	200 ppm	250 ppm	----	X
Methomyl (Iannate)	16752-77-5	2.5 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>	----	----
Methoxychlor	72-43-5	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
2-Methoxyethanol (Methyl cellosolve)	109-86-4	5 ppm	10 ppm	----	X
2-Methoxyethyl acetate (Methyl cellosolve acetate)	110-49-6	5 ppm	10 ppm	----	X
4-Methoxyphenol	150-76-5	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Methyl acetate	79-20-9	200 ppm	250 ppm	----	----
Methyl acetylene (propyne)	74-99-7	1,000 ppm	1,250 ppm	----	----
Methyl acetylene-propadiene mixture (MAPP)	----	1,000 ppm	1,250 ppm	----	----
Methyl acrylate	96-33-3	10 ppm	20 ppm	----	X
Methylacrylonitrile	126-98-7	1 ppm	3 ppm	----	X
Methylal (Dimethoxy-methane)	109-87-5	1,000 ppm	1,250 ppm	----	----
Methyl alcohol (methanol)	67-56-1	200 ppm	250 ppm	----	X
Methylamine	74-89-5	10 ppm	20 ppm	----	----
Methyl amyl alcohol (Methyl isobutyl carbinol)	108-11-2	25 ppm	40 ppm	----	X
Methyl n-amyl ketone (2-Heptanone)	110-43-0	50 ppm	75 ppm	----	----



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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
N-Methyl aniline (Monomethyl aniline)	100-61-8	0.5 ppm	1.5 ppm	----	X
Methyl bromide	74-83-9	5 ppm	10 ppm	----	X
Methyl-n-butyl ketone (2-Hexanone)	591-78-6	5 ppm	10 ppm	----	----
Methyl cellosolve (2-Methoxyethanol)	109-86-4	5 ppm	10 ppm	----	X
Methyl cellosolve acetate (2-Methoxyethyl acetate)	110-49-6	5 ppm	10 ppm	----	X
Methyl chloride	74-87-3	50 ppm	100 ppm	----	----
Methyl chloroform (1, 1, 1-trichlorethane)	71-55-6	350 ppm	450 ppm	----	----
Methyl chloromethyl ether (chloromethyl methyl ether) (see WAC 296-62-073)	107-30-2	----	----	----	----
Methyl 2-cyanoacrylate	137-05-3	2 ppm	4 ppm	----	----
Methylcyclohexane	108-87-2	400 ppm	500 ppm	----	----
Methylcyclohexanol	25639-42-3	50 ppm	75 ppm	----	----
Methylcyclohexanone	583-60-8	50 ppm	75 ppm	----	X
Methylcyclopentadienyl manganese tricarbonyl (as Mn)	12108-13-3	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	X
Methyl demeton	8022-00-2	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	X
Methylene bisphenyl isocyanate (MDI) (Diphenylmethane)	101-68-8	----	----	0.02 ppm	----

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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
4,4'-Methylene bis (2-chloro-aniline) (MBOCA) (see WAC 296-62-073)	101-14-4	----	----	----	X
Methylene bis (4-cyclohexylisocyanate)	5124-30-1	----	----	0.01 ppm	----
Methylene chloride (Dichloromethane) (see WAC 296-62-07470)	75-09-2	25 ppm	125 ppm	----	----
4,4-Methylene dianiline (MDA) (see WAC 296-62-076)	101-77-9	0.01 ppm	0.1 ppm	----	X
Methyl ethyl ketone (MEK) (2-Butanone)	78-93-3	200 ppm	300 ppm	----	----
Methyl ethyl ketone peroxide (MEKP)	1338-23-4	----	----	0.2 ppm	----
Methyl formate	107-31-3	100 ppm	150 ppm	----	----
5-Methyl-3-heptanone (Ethyl amyl ketone)	541-85-5	25 ppm	38 ppm	----	----
Methyl hydrazine (Monomethyl hydrazine)	60-34-4	----	----	0.2 ppm	X
Methyl iodide	74-88-4	2 ppm	4 ppm	----	X
Methyl isoamyl ketone	110-12-3	50 ppm	75 ppm	----	----
Methyl isobutyl carbinol (Methyl amyl alcohol)	108-11-2	25 ppm	40 ppm	----	X
Methyl isobutyl ketone (Hexone)	108-10-1	50 ppm	75 ppm	----	----



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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Methyl isocyanate	624-83-9	0.02 ppm	0.06 ppm	----	X
Methyl isopropyl ketone	563-80-4	200 ppm	250 ppm	----	----
Methyl mercaptan (Methanethiol)	74-93-1	0.5 ppm	1.5 ppm	----	----
Methyl methacrylate	80-62-6	100 ppm	150 ppm	----	----
Methyl parathion	298-00-0	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	X
Methyl propyl ketone (2-Pentanone)	107-87-9	200 ppm	250 ppm	----	----
Methyl silicate	684-84-5	1 ppm	3 ppm	----	----
alpha-Methyl styrene	98-83-9	50 ppm	100 ppm	----	----
Mevinphos (Phosdrin)	7786-34-7	0.01 ppm	0.03 ppm	----	X
Metribuzin	21087-64-9	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Mica (Silicates) Respirable fraction	12001-26-2	3 mg/m <sup>3</sup>	6 mg/m <sup>3</sup>	----	----
Molybdenum (as Mo)	7439-98-7	----	----	----	----
Soluble compounds	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Insoluble compounds	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Monochlorobenzene (Chlorobenzene)	108-90-7	75 ppm	113 ppm	----	----
Monocrotophos (Azodrin)	6923-22-4	0.25 mg/m <sup>3</sup>	0.75 mg/m <sup>3</sup>	----	----
Monomethyl aniline (N-Methyl aniline)	100-61-8	0.5 ppm	1.5 ppm	----	X
Monomethyl hydrazine	----	----	----	0.2 ppm	----
Morpholine	110-91-8	20 ppm	30 ppm	----	X
Naled (Dibrom)	300-76-5	3 mg/m <sup>3</sup>	6 mg/m <sup>3</sup>	----	X
Naphtha	8030-30-6	100 ppm	150 ppm	----	X
Naphthalene	91-20-3	10 ppm	15 ppm	----	----
alpha-Naphthylamine (see WAC 296-62-073)	134-32-7	----	----	----	----

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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Beta-Naphthylamine (see WAC 296-62-073)	91-59-8	----	----	----	----
Neon	7440-01-9	Simple asphyxiant	----	----	----
Nickel carbonyl (as Ni)	13463-39-3	0.001 ppm	0.003 ppm	----	----
Nickel (as Ni)	7440-02-0	----	----	----	----
Metal and insoluble compounds	----	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	----
Soluble compounds	----	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Nicotine	54-11-5	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	X
Nitrapyrin (2-Chloro-6 trichloromethyl pyridine)	1929-82-4	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Nitric acid	7697-37-2	2 ppm	4 ppm	----	----
Nitric oxide	10102-43-9	25 ppm	38 ppm	----	----
p-Nitroaniline	100-01-6	3 mg/m <sup>3</sup>	6 mg/m <sup>3</sup>	----	X
Nitrobenzene	98-95-3	1 ppm	3 ppm	----	X
4-Nitrobiphenyl (see WAC 296-62-073)	92-93-3	----	----	----	----
p-Nitrochlorobenzene	100-00-5	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	X
4-Nitrodiphenyl (see WAC 296-62-073)	----	----	----	----	----
Nitroethane	79-24-3	100 ppm	150 ppm	----	----
Nitrogen	7727-37-9	Simple asphyxiant	----	----	----
Nitrogen dioxide	10102-44-0	----	1 ppm	----	----
Nitrogen oxide (Nitrous oxide)	10024-97-2	50 ppm	75 ppm	----	----
Nitrogen trifluoride	7783-54-2	10 ppm	20 ppm	----	----



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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Nitroglycerin	55-63-0	----	0.1 mg/m <sup>3</sup>	----	X
Nitromethane	75-52-5	100 ppm	150 ppm	----	----
1-Nitropropane	108-03-2	25 ppm	38 ppm	----	----
2-Nitropropane	79-46-9	10 ppm	20 ppm	----	----
N-Nitrosodimethylamine (see WAC 296-62-073)	62-75-9	----	----	----	----
Nitrotoluene	----	----	----	----	----
o-isomer	88-72-2	2 ppm	4 ppm	----	X
m-isomer	98-08-2	2 ppm	4 ppm	----	X
p-isomer	99-99-0	2 ppm	4 ppm	----	X
Nitrotrichloromethane (Chloropicrin)	76-06-2	0.1 ppm	0.3 ppm	----	----
Nitrous oxide (Nitrogen oxide)	10024-97-2	50 ppm	75 ppm	----	----
Nonane	111-84-2	200 ppm	250 ppm	----	----
Octachloronaphthalene	2234-13-1	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Octane	111-65-9	300 ppm	375 ppm	----	----
Oil mist mineral (particulate)	8012-95-1	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Osmium tetroxide (as Os)	20816-12-0	0.0002 ppm	0.0006 ppm	----	----
Oxalic acid	144-62-7	1 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>	----	----
Oxygen difluoride	7783-41-7	----	----	0.05 ppm	----
Ozone	10028-15-6	0.1 ppm	0.3 ppm	----	----
Paper fiber (Cellulose)	9004-34-6	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Paraffin wax fume	8002-74-2	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	----

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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Paraquat	----	----	----	----	----
Respirable fraction	4685-14-7	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
	1910-42-5				
	2074-50-2				
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Pentaborane	19624-22-7	0.005 ppm	0.015 ppm	----	----
Pentachloronaphthalene	1321-64-8	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	X
Pentachlorophenol	87-86-5	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	X
Pentaerythritol	115-77-5	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Pentane	109-66-0	600 ppm	750 ppm	----	----
2-Pentanone (methyl propyl ketone)	107-87-9	200 ppm	250 ppm	----	----
Perchloroethylene (tetrachloroethylene)	127-18-4	25 ppm	38 ppm	----	----
Perchloromethyl mercaptan	594-42-3	0.1 ppm	0.3 ppm	----	----
Perchloryl fluoride	7616-94-6	3 ppm	6 ppm	----	----
Perlite	----	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Petroleum distillates (Naphtha, rubber solvent)	----	100 ppm	150 ppm	----	----
Phenacyl chloride ( $\alpha$ -Chloroaceto- phenone)	532-21-4	0.05 ppm	0.15 ppm	----	----



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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Phenol	108-95-2	5 ppm	10 ppm	----	X
Phenothiazine	92-84-2	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	X
p-Phenylenediamine	106-50-3	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Phenyl ether (vapor)	101-84-8	1 ppm	3 ppm	----	----
Phenyl ether-diphenyl mixture (vapor)	----	1 ppm	3 ppm	----	----
Phenylethylene (Styrene)	100-42-5	50 ppm	100 ppm	----	----
Phenyl glycidyl ether (PGE)	122-60-1	1 ppm	3 ppm	----	----
Phenylhydrazine	100-63-0	5 ppm	10 ppm	----	X
Phenyl mercaptan	108-98-5	0.5 ppm	1.5 ppm	----	----
Phenylphosphine	638-21-1	----	----	0.05 ppm	----
Phorate	298-02-2	0.05 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>	----	X
Phosdrin (Mevinphos)	7786-34-7	0.01 ppm	0.03 ppm	----	X
Phosgene (carbonyl chloride)	75-44-5	0.1 ppm	0.3 ppm	----	----
Phosphine	7803-51-2	0.3 ppm	1 ppm	----	----
Phosphoric acid	7664-38-2	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	----
Phosphorus (yellow)	7723-14-0	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Phosphorous oxychloride	10025-87-3	0.1 ppm	0.3 ppm	----	----
Phosphorus pentachloride	10026-13-8	0.1 ppm	0.3 ppm	----	----
Phosphorus pentasulfide	1314-80-3	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	----
Phosphorus trichloride	12-2-19	0.2 ppm	0.5 ppm	----	----
Phthalic anhydride	85-44-9	1 ppm	3 ppm	----	----
m-Phthalodinitrile	626-17-5	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Picloram	1918-02-1	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----

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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Picric acid (2, 4, 6-Trinitrophenol)	88-89-1	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Pindone (2-Pivalyl-1, 3-indandione, Pival)	83-26-1	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Piperazine dihydrochloride	142-64-3	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Platinum (as Pt)	7440-06-4	----	----	----	----
Metal	----	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	----
Soluble salts	----	0.002 mg/m <sup>3</sup>	0.006 mg/m <sup>3</sup>	----	----
Polychlorobiphenyls (Chlorodiphenyls)	----	----	----	----	----
42% Chlorine (PCB)	53469-21-9	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	X
54% Chlorine (PCB)	11097-69-1	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	X
Portland cement	65997-15-1	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Potassium hydroxide	1310-58-3	----	----	2 mg/m <sup>3</sup>	----
Propane	74-98-6	1,000 ppm	1,250 ppm	----	----
Propargyl alcohol	107-19-7	1 ppm	3 ppm	----	X
beta-Propiolactone (see WAC 296-62-073)	57-57-8	----	----	----	----
Propionic acid	79-09-4	10 ppm	20 ppm	----	----
Propoxur (Baygon)	114-26-1	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	----
n-Propyl acetate	109-60-4	200 ppm	250 ppm	----	----
n-Propyl alcohol	71-23-8	200 ppm	250 ppm	----	X
n-Propyl nitrate	627-13-4	25 ppm	40 ppm	----	----



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Propylene	---	Simple asphyxiant	---	---	---
Propylene dichloride (1, 2-Dichloropropane)	78-87-5	75 ppm	110 ppm	---	---
Propylene glycol dinitrate	6423-43-4	0.05 ppm	0.15 ppm	---	X
Propylene glycol monomethyl ether	107-98-2	100 ppm	150 ppm	---	---
Propylene imine	75-55-8	2 ppm	4 ppm	---	X
Pyrocatachol (Catechol)	120-80-9	5 ppm	10 ppm	---	X
Quinone (p-Benzoquinone)	106-51-4	0.1 ppm	0.3 ppm	---	---
RDX (Cyclonite)	---	1.5 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	---	X
Resorcinol	108-46-3	10 ppm	20 ppm	---	---
Rhodium (as Rh)	7440-16-6	---	---	---	---
Insoluble compounds, metal fumes and dusts	---	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	---	---
Soluble compounds, salts	---	0.001 mg/m <sup>3</sup>	0.003 mg/m <sup>3</sup>	---	---
Ronnel	299-84-3	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Rosin core solder, pyrolysis products (as formaldehyde)	8050-09-7	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	---	---
Rotenone	83-79-4	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Rouge	---	---	---	---	---
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Rubber solvent (naphtha)	8030-30-6	100 ppm	150 ppm	---	---
Selenium compounds (as Se)	7782-49-2	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	---	---
Selenium hexafluoride (as Se)	7783-79-1	0.05 ppm	0.15 ppm	---	---
Sesone (Crag herbicide)	136-78-7	---	---	---	---
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Sevin (Carbaryl)	63-25-2	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---

Evaluate and Control  
Employee Exposure



# Evaluate and Control Employee Exposures

WAC 296-841-200

## Rule

Table 3  
Permissible Exposure Limits for Air Contaminants

Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Silane (see Silicon tetrahydride)	7803-62-5	5 ppm	10 ppm	----	----
Silica, amorphous, precipitated and gel	112926-00-8	6 mg/m <sup>3</sup>	12 mg/m <sup>3</sup>	----	----
Silica, amorphous, diatomaceous earth, containing less than 1% crystalline silica	61790-53-2	----	----	----	----
Total particulate	----	6 mg/m <sup>3</sup>	12 mg/m <sup>3</sup>	----	----
Respirable fraction	----	3 mg/m <sup>3</sup>	6 mg/m <sup>3</sup>	----	----
Silica, crystalline cristobalite	----	----	----	----	----
Respirable fraction	14464-46-1	0.05 mg/m <sup>3</sup>	0.15 mg/m <sup>3</sup>	----	----
Silica, crystalline quartz	----	----	----	----	----
Respirable fraction	14808-60-7	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Silica, crystalline tripoli (as quartz)	----	----	----	----	----
Respirable fraction	1317-95-9	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Silica, crystalline tridymite	----	----	----	----	----
Respirable fraction	15468-32-3	0.05 mg/m <sup>3</sup>	0.15 mg/m <sup>3</sup>	----	----
Silica, fused	----	----	----	----	----
Respirable fraction	60676-86-0	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	----
Silicates (less than 1% crystalline silica )	----	----	----	----	----
Mica	----	----	----	----	----
Respirable fraction	12001-26-2	3 mg/m <sup>3</sup>	6 mg/m <sup>3</sup>	----	----
Soapstone	----	----	----	----	----
Total particulate	----	6 mg/m <sup>3</sup>	12 mg/m <sup>3</sup>	----	----
Respirable fraction	----	3 mg/m <sup>3</sup>	6 mg/m <sup>3</sup>	----	----
Talc (containing asbestos) (see WAC 296-62-07705)	----	----	----	----	----
Talc (containing no asbestos)	----	----	----	----	----
Respirable fraction	14807-96-6	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	----



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Table 3  
Permissible Exposure Limits for Air Contaminants

Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Tremolite (see WAC 296-62-07705)	---	---	---	---	---
Silicon	7440-21-3	---	---	---	---
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Silicon carbide	409-21-2	---	---	---	---
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Silicon tetrahydride (Silane)	7803-62-5	5 ppm	10 ppm	---	---
Silver, metal dust and soluble compounds (as Ag)	7440-22-4	0.01 mg/m <sup>3</sup>	0.03 mg/m <sup>3</sup>	---	---
Soapstone	---	---	---	---	---
Total particulate	---	6 mg/m <sup>3</sup>	12 mg/m <sup>3</sup>	---	---
Respirable fraction	---	3 mg/m <sup>3</sup>	6 mg/m <sup>3</sup>	---	---
Sodium azide (as HN <sub>3</sub> or NaN <sub>3</sub> )	26628-22-8	---	---	0.1 ppm	X
Sodium bisulfite	7631-90-5	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Sodium-2, 4-dichloro-phenoxyethyl sulfate (Crag herbicide)	136-78-7	---	---	---	---
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Sodium fluoroacetate	62-74-8	0.05 mg/m <sup>3</sup>	0.15 mg/m <sup>3</sup>	---	X
Sodium hydroxide	1310-73-2	---	---	2 mg/m <sup>3</sup>	---
Sodium metabisulfite	7681-57-4	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Starch	9005-25-8	---	---	---	---
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Stibine	7803-52-3	0.1 ppm	0.3 ppm	---	---
Stoddard solvent	8052-41-3	100 ppm	150 ppm	---	---
Strychnine	57-24-9	0.15 mg/m <sup>3</sup>	0.45 mg/m <sup>3</sup>	---	---

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# Evaluate and Control Employee Exposures

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Table 3  
Permissible Exposure Limits for Air Contaminants

Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Styrene (Phenylethylene, Vinyl benzene)	100-42-5	50 ppm	100 ppm	----	----
Subtilisins	9014-01-1	----	0.00006 mg/m <sup>3</sup> (60 min.)	----	---
Sucrose	57-50-1	----	----	----	---
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	---
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	---
Sulfotep (TEDP)	3689-24-5	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	X
Sulfur dioxide	7446-09-5	2 ppm	5 ppm	----	---
Sulfur hexafluoride	2551-62-4	1,000 ppm	1,250 ppm	----	---
Sulfuric acid	7664-93-9	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	---
Sulfur monochloride	10025-67-9	----	----	1 ppm	---
Sulfur pentafluoride	5714-22-1	----	----	0.01 ppm	---
Sulfur tetrafluoride	7783-60-0	----	----	0.1 ppm	---
Sulfuryl fluoride	2699-79-8	5 ppm	10 ppm	----	---
Sulprofos	35400-43-2	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	---
Systox (Demeton)	8065-48-3	0.01 ppm	0.03 ppm	----	X
2, 4, 5-T	93-76-5	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	---
Talc (containing asbestos) (see WAC 296-62-07705)	----	----	----	----	---
Talc (containing no asbestos)	----	----	----	----	---
Respirable fraction	14807-96-6	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	---
Tantalum	----	----	----	----	---
Metal and oxide dusts	7440-25-7	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	---
TDI (Toluene-2, 4-diisocyanate)	584-84-9	0.005 ppm	0.02 ppm	----	---
TEDP (Sulfotep)	3689-24-5	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	X
Tellurium and compounds (as Te)	13494-80-9	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	---

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Table 3  
Permissible Exposure Limits for Air Contaminants

Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Tellurium hexafluoride (as Te)	7783-80-4	0.02 ppm	0.06 ppm	----	----
Temephos (Abate)	3383-96-8	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
TEPP	107-49-3	0.004 ppm	0.012 ppm	----	X
Terphenyls	26140-60-3	----	----	0.5 ppm	----
1, 1, 1, 2-Tetrachloro-2, 2-difluoroethane	76-11-0	500 ppm	625 ppm	----	----
1, 1, 2, 2-Tetrachloro-1, 2-difluoroethane	76-12-0	500 ppm	625 ppm	----	----
1, 1, 2, 2-Tetrachloroethane	79-34-5	1 ppm	3 ppm	----	X
Tetrachloroethylene (Perchloroethylene)	127-18-4	25 ppm	38 ppm	----	----
Tetrachloromethane (Carbon tetrachloride)	56-23-5	2 ppm	4 ppm	----	X
Tetrachloronaphthalene	1335-88-2	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	X
Tetraethyl lead (as Pb)	78-00-2	0.075 mg/m <sup>3</sup>	0.225 mg/m <sup>3</sup>	----	X
Tetrahydrofuran	109-99-9	200 ppm	250 ppm	----	----
Tetramethyl lead (as Pb)	75-74-1	0.075 mg/m <sup>3</sup>	0.225 mg/m <sup>3</sup>	----	X
Tetramethyl succinonitrile	3333-52-6	0.5 ppm	1.5 ppm	----	X
Tetranitromethane	509-14-8	1 ppm	3 ppm	----	----
Tetrasodium pyrophosphate	7722-88-5	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Tetryl (2, 4, 6-trinitrophenyl-methylnitramine)	479-45-8	1.5 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	X
Thallium (soluble compounds) (as Tl)	7440-28-0	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
4, 4-Thiobis (6-tert-butyl-m-cresol)	96-69-5	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Thiodan (Endosulfan)	115-29-7	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X

Evaluate and Control  
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# Evaluate and Control Employee Exposures

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Table 3  
Permissible Exposure Limits for Air Contaminants

Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Thioglycolic acid	68-11-1	1 ppm	3 ppm	----	X
Thionyl chloride	7719-09-7	----	----	1 ppm	----
Thiram (see WAC 296-62-07519)	137-26-8	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Tin (as Sn)	----	----	----	----	----
Inorganic compounds	7440-31-5	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	----
Tin (as Sn)	----	----	----	----	----
Organic compounds	7440-31-5	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Tin oxide (as Sn)	21651-19-4	2 mg/m <sup>3</sup>	4 mg/m <sup>3</sup>	----	----
Titanium dioxide	13463-67-7	----	----	----	----
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	----
TNT (2, 4, 6-Trinitrotoluene)	118-96-7	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	X
Toluene	108-88-3	100 ppm	150 ppm	----	----
Toluene-2, 4-diisocyanate (TDI)	584-84-9	0.005 ppm	0.02 ppm	----	----
m-Toluidine	108-44-1	2 ppm	4 ppm	----	X
o-Toluidine	95-53-4	2 ppm	4 ppm	----	X
p-Toluidine	106-49-0	2.0 ppm	4 ppm	----	X
Toxaphene (Chlorinated camphene)	8001-35-2	0.5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	----	X
Tremolite (see WAC 296-62-07705)	----	----	----	----	----
Tributyl phosphate	126-73-8	0.2 ppm	0.6 ppm	----	----
Trichloroacetic acid	76-03-9	1 ppm	3 ppm	----	----
1, 2, 4-Trichlorobenzene	120-82-1	----	----	5 ppm	----
1, 1, 1-Trichloroethane (Methyl chloroform)	71-55-6	350 ppm	450 ppm	----	----
1, 1, 2-Trichloroethane	79-00-5	10 ppm	20 ppm	----	----
Trichloroethylene	79-01-6	50 ppm	200 ppm	----	----
Trichlorofluoromethane (Fluorotrichloromethane)	75-69-4	----	----	1,000 ppm	----

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Table 3  
Permissible Exposure Limits for Air Contaminants

Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
Trichloromethane (Chloroform)	67-66-3	2 ppm	4 ppm	----	----
Trichloronaphthalene	1321-65-9	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	X
1, 2, 3-Trichloropropane	96-18-4	10 ppm	20 ppm	----	X
1, 1, 2-Trichloro-1, 2, 2-trifluoroethane	76-13-1	1,000 ppm	1,250 ppm	----	----
Tricyclohexyltin hydroxide (Cyhexatin)	13121-70-5	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Triethylamine	121-44-8	10 ppm	15 ppm	----	----
Trifluorobromomethane	75-63-8	1,000 ppm	1,250 ppm	----	----
Trimellitic anhydride	552-30-7	0.005 ppm	0.015 ppm	----	----
Trimethylamine	75-50-3	10 ppm	15 ppm	----	----
Trimethyl benzene	25551-13-7	25 ppm	38 ppm	----	----
Trimethyl phosphite	121-45-9	2 ppm	4 ppm	----	----
2, 4, 6-Trinitrophenol (Picric acid)	88-89-1	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
2, 4, 6-Trinitrophenyl-methylnitramine (Tetryl)	479-45-8	1.5 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	X
2, 4, 6-Trinitrotoluene (TNT)	118-96-7	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>	----	X
Triorthocresyl phosphate	78-30-8	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	----	X
Triphenyl amine	603-34-9	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Triphenyl phosphate	115-86-6	3 mg/m <sup>3</sup>	6 mg/m <sup>3</sup>	----	----
Tungsten (as W)	7440-33-7	----	----	----	----
Soluble compounds	----	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	----
Insoluble compounds	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	----
Turpentine	8006-64-2	100 ppm	150 ppm	----	----
Uranium (as U)	7440-61-1	----	----	----	----
Soluble compounds	----	0.05 mg/m <sup>3</sup>	0.15 mg/m <sup>3</sup>	----	----
Insoluble compounds	----	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	----	----

Evaluate and Control  
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# Evaluate and Control Employee Exposures

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Table 3  
Permissible Exposure Limits for Air Contaminants

Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
n-Valeraldehyde	110-62-3	50 ppm	75 ppm	---	---
Vanadium (as V <sub>2</sub> O <sub>5</sub> )	---	---	---	---	---
Respirable fraction	1314-62-1	0.05 mg/m <sup>3</sup>	0.15 mg/m <sup>3</sup>	---	---
Vegetable oil mist	---	---	---	---	---
Total particulate	---	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	---	---
Respirable fraction	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Vinyl acetate	108-05-1	10 ppm	20 ppm	---	---
Vinyl benzene (Styrene)	100-42-5	50 ppm	100 ppm	---	---
Vinyl bromide	593-60-2	5 ppm	10 ppm	---	---
Vinyl chloride (Chloroethylene) (see WAC 296-62-07329)	75-01-4	1 ppm	5 ppm	---	---
Vinyl cyanide (Acrylonitrile) (see WAC 296-62-07336)	107-13-1	2 ppm	10 ppm	---	---
Vinyl cyclohexene dioxide	106-87-6	10 ppm	20 ppm	---	X
Vinyl toluene	25013-15-4	50 ppm	75 ppm	---	---
Vinylidene chloride (1, 1-Dichloroethylene)	75-35-4	1 ppm	3 ppm	---	---
VM & P Naphtha	8032-32-4	300 ppm	400 ppm	---	---
Warfarin	81-81-2	0.1 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	---	---
Welding fumes (total particulate)	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Wood dust	---	---	---	---	---
Nonallergenic; (All woods except allergenics)	---	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	---	---
Allergenics (e.g. cedar, mahogany and teak)	---	2.5 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>	---	---
Xylenes (ortho, meta, and para isomers) (Dimethylbenzene)	1330-20-7	100 ppm	150 ppm	---	---



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Table 3  
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Substance	CAS	TWA <sub>8</sub>	STEL	Ceiling	Skin
m-Xylene alpha, alpha-diamine	1477-55-0	----	----	0.1 mg/m <sup>3</sup>	X
Xylylidine (Dimethylaminobenzene)	1300-73-8	2 ppm	4 ppm	----	X
Yttrium	7440-65-5	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	----	---
Zinc chloride fume	7646-85-7	1 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>	----	---
Zinc chromate (as CrO <sub>3</sub> )	Varies with compound	0.05 mg/m <sup>3</sup>	----	0.1 mg/m <sup>3</sup>	---
Zinc oxide	1314-13-2	----	----	----	---
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	---
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m	----	---
Zinc oxide fume	1314-13-2	5 mg/g <sup>3</sup>	10 mg/m <sup>3</sup>	----	---
Zinc stearate	557-05-1	----	----	----	---
Total particulate	----	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	----	---
Respirable fraction	----	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	---
Zirconium compounds (as Zr)	7440-67-2	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	----	---

Evaluate and Control  
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# Notes

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